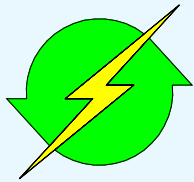


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# **Diesel Control Requirements for Wind-Diesel Systems**

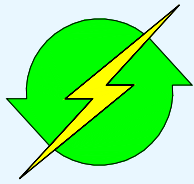
**Steve Drouilhet  
Sustainable Automation, LLC**



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## **Diesel Plant Must Be Automated!**

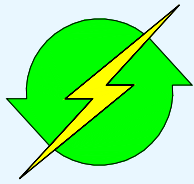
- **Manual diesel dispatch no longer practical**
  - When wind variability is added, net load no longer predicatable
  - Would require 24 hour/day operator monitoring
- **Consequences of following old manual dispatch routine:**
  - Diesel operates lightly load at times
    - Wet stacking, cylinder glazing
  - Energy unnecessarily wasted in dump load, just to keep the diesel loaded
    - Wind energy wasted
    - Poor fuel savings



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## **Functional Requirements**

- **Automatic engine startup and shutdown**
- **Automatic synchronization**
- **Automatic load (kW) sharing with other diesels**
- **Soft loading and unloading**
- **Automatic reactive power (VAR) sharing**



# **Hardware Requirements**

- **Voltage Regulator and Speed Control**



- **Automatic engine controller**
  - **Synchronizer**
  - **Load sharing module**
  - **Reactive power sharing module or cross current compensation.**
- 
- **Many of these functions can be combined in modern integrated genset controllers.**

## **Diesel Controls Retrofit Options**

- **Field integrate new discrete control modules into existing generator control panels.**
  - **Least hardware cost.**
  - **Potentially most cost in field work and troubleshooting**
- **Install pre-engineered pre-tested controls package into existing switchgear cabinets.**
  - **Higher hardware cost but reduced design and installation cost.**
- **Install all new automated diesel switchgear.**
  - **Highest cost but potentially best choice**